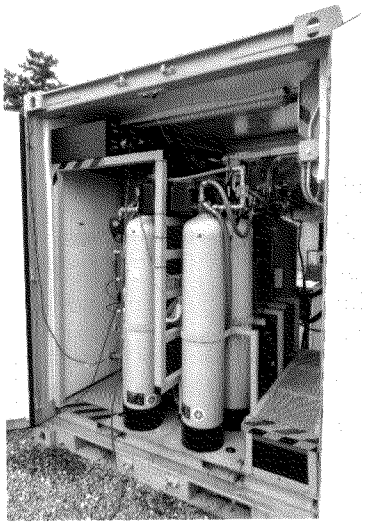
# Demonstrated Technologies
# Water Resupply Reduction

## Gray Water Reuse (GWR)

The GWR is a stand-alone gray water recycle/reuse system designed to provide gray wastewater treatment capabilities at contingency bases to reduce non-potable water resupply needs. The system provides an improved capability that is designed to adapt to widely varying load conditions to treat more influent streams with less fouling and increased recovery of treated water. The system reduces the logistics burden and reduces health risks to Warfighters.



This gray water reuse technology can be integrated into current Combat Service Support equipment to include:

- *Water Purification Systems*
- *Shower and Laundry Systems*
- *Field Feeding and Medical Systems*

System characteristics are:

- *Size – Pack out volume of ≤ 416 ft³ (Tricon)*
- *Weight – ≤7,110 lbs.*
- *Manpower – Minimal, Automatic control and operation*

Technical Point of Contact: Lateefah C. Brooks, TARDEC, lateefah.c.brooks.civ@mail.mil, 586-282-6587

## Wastewater Treatment - Biological (WWT-Bio)

The WWT-Bio is a stand-alone biological-based system designed to provide wastewater treatment capabilities at contingency bases to reduce wastewater hauling. Treatment of wastewater to meet EPA secondary treatment standards will allow for safe onsite discharge and a 90%+ reduction in wastewater hauling requirements. The system provides a new capability that is designed to adapt to widely varying load conditions and provide rapid start-up. It reduces the logistics burden and health risks to Warfighters.

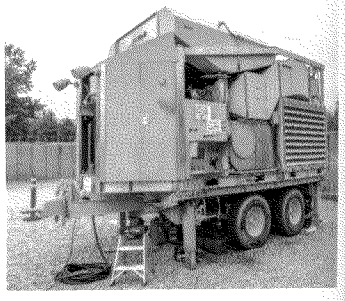
System characteristics are:

- *Size – Pack out volume of ≤ 416 ft³ (Tricon).*
- *Weight – ≤7,110 lbs.*
- *Manpower – Minimal, Automatic control and operation*

Technical Point of Contact: Lateefah C. Brooks, TARDEC, lateefah.c.brooks.civ@mail.mil, 586-282-6587

## Modular Force Water Generation Storage & Analysis (Water from Air)

The Water from Air (WFA) system generates water from atmospheric humidity using absorption/desorption solid desiccant technology, energy recovery and condensation. The system provides next generation water production and distribution capabilities through mobile water-from-air generation/storage. The system is mounted on a 7.5-ton trailer and is designed to produce up to 500 gallons of water per day based on the 80th percentile of Iraq climate data.



The WFA provides the following benefits:

- *Fills the Water from Air capability gap identified in the Petroleum & Water Functional Solutions Analysis*
- *Reduces the logistical footprint associated with bulk liquid storage and distribution by 50 to 75%*
- *Economic analysis using the Sustain the Mission Project*

*methodology demonstrates payback in less than 1 year*
- *Reduces or eliminates base camp water resupply*

System characteristics are:

- *Size – 14'x 8'x 12'*
- *Weight – 22,000 lbs*
- *Manpower – Approximately 4-5 hrs./day for start-up, shut-down, monitoring & basic maintenance*

Technical Point of Contact: Lateefah C. Brooks, TARDEC, lateefah.c.brooks.civ@mail.mil, 586-282-6587.

## Real Time Inline Diagnostic Technology for Water Monitoring (WATERMON)

The WATERMON system consists of a suite of sensors for In-line Water Monitoring applications. The system is a water demand reduction technology capable of providing quality assurance information for >30 days use of field water produced using new processing techniques. The system is also capable of enabling the performance optimization of water treatment equipment.

Other important characteristics of the system are:

- *Autonomous, battery powered.*
- *Wireless- and network-capable sensors compatible with most computing devices, smart phones & media players.*
- *Interoperable with most water treatment and handling systems using supplied connections.*
- *Testing raw and product water <5% accuracy for each water quality parameter and <5 min total analysis time.*
- *Non-specific MOS operator can be trained within 2 hours.*

Technical Point of Contact: Lisa Neuendorff, TARDEC, lisa.k.neuendorff.civ@mail.mil, 586-282-4161.

## Water Quality Monitoring (Pathogen Monitor)

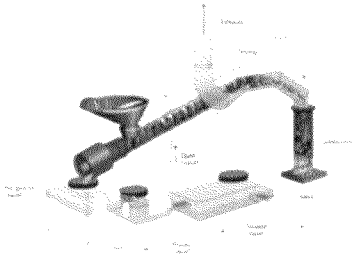
The pathogen monitor provides quality assurance capability for recycling of shower and laundry grey water at contingency bases. The development consists of a prototype hand-held pathogen detection devices and a feedback mechanism of informing gray water recycling systems in the field.

The pathogen monitor benefits are:

- *Support the reduction of Army convoys required to haul wastewater from a contingency base.*
- *Capacity enabler for gray water recycling systems.*
- *Enables the use of less skilled manpower to operate gray water recycling systems on small bases.*
- *Protects Soldier Health through improved gray water treatment process monitoring.*

Technical Point of Contact: Lisa Neuendorff, TARDEC, lisa.k.neuendorff.civ@mail.mil, 586-282-4161.

## Water Demand Reduction Technologies for Forward Operating Base Organizational Equipment



The Water Demand Reduction Technologies for Forward Operating Base Organizational Equipment technology project will investigate non-traditional technologies (novel materials, chemistries and processes) capable of reducing or eliminating the use of water within base camp organizational equipment, such as laundries, showers, and latrines. During this technology exploration, the definition of water demand reduction requirements and program metrics will be completed. The highest payoff and manageable risk technologies will be down-selected and prototyped for demonstration.

The Water Demand Reduction Technologies for Forward Operating Base Organizational Equipment technology project will demonstrate the following capabilities and/or products:

- *Formalized water demand reduction requirements and program metrics*
- *Test data and validation of water demand reduction technology through small-scale laboratory experimentation*
- *Insertion of technology metrics into SLB-STO-D modeling and simulation environment to determine net-impact to base camp water consumption*
- *Participation in SLB-STO-D's Demo II will potentially include the Xeros laundry unit, a low flow showerhead, and RTI liquid disinfection system (or complete latrine system)*